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ART 34 AMDT

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WHAT IS CLAIMED IS:

1. A method for producing polyunsaturated fatty acids from diatomaceous *Chaetoceros gracilis*, comprising the step of applying at least one growth-limiting factor to a diatomaceous *Chaetoceros gracilis* culture at the end of the exponential growth phase, causing growth arrest of said culture and production and stocking by algae in culture of polyunsaturated fatty acids.
2. A method for producing polyunsaturated fatty acids from diatomaceous *Skeletonema costatum*, comprising the step of applying at least one growth-limiting factor to a diatomaceous *Skeletonema costatum* culture at the end of the exponential growth phase, causing growth arrest of said culture and production and stocking by algae in culture of polyunsaturated fatty acids.
3. The process of claim 1 or 2, wherein the growth-limiting factor is silicate deprivation.
4. The process of claim 1 or 2, wherein the growth-limiting factor is a nutrient deprivation.
5. The process of claim 1, 2, 3 or 4, wherein more than one growth-limiting factor is applied.
6. The process of claim 1, 2, 3, 4 or 5, wherein the growth limiting factor is applied once the culture has reached a concentration of at least  $10^7$  cells/mL.